National Institute of Environmental Health Sciences

The Regional Network for Asian Schistosomiasis and Other Helminth Zoonoses (RNAS(+)): Target diseases in face of climate change

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Abstract:

Climate change-according to conventional wisdom-will result in an expansion of tropical parasitic diseases in terms of latitude and altitude, with vector-borne diseases particularly prone to change. However, although a significant rise in temperature occurred over the past century, there is little empirical evidence whether climate change has indeed favoured infectious diseases. This might be explained by the complex relationship between climate change and the frequency and the transmission dynamics of infectious diseases, which is characterised by nonlinear associations and countless other complex factors governing the distribution of infectious diseases. Here, we explore whether and how climate change might impact on diseases targeted by the Regional Network for Asian Schistosomiasis and Other Helminth Zoonoses (RNAS(+)). We start our review with a short summary of the current evidence-base how climate change affects the distribution of infectious diseases. Next, we introduce biology-based models for predicting the distribution of infectious diseases in a future, warmer world. Two case studies are presented: the classical RNAS(+) disease schistosomiasis and an emerging disease, angiostrongyliasis, focussing on their occurrences in the People's Republic of China. Strengths and limitations of current models for predicting the impact of climate change on infectious diseases are discussed, and we propose model extensions to include social and ecological factors. Finally, we recommend that mitigation and adaptation strategies to diminish potential negative effects of climate change need to be developed in concert with key stakeholders so that surveillance and early-warning systems can be strengthened and the most vulnerable population groups protected.

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Resource Description

Early Warning System: ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☑

weather or climate related pathway by which climate change affects health

Unspecified Exposure

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Helminthiases, Schistosomiasis

Foodborne/Waterborne Disease (other): angiostrongyliasis

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Methodology

Resource Type: ☑

format or standard characteristic of resource

Review

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content